AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method for providing a real-time broadcast service in a mobile communication system, the mobile communication system comprising a radio access network and a plurality of mobile terminals, where the radio access network has an original service hierarchy; the method comprising:

~~A.~~ linking the real-time broadcast service to the radio access~~mobile communication~~ network; ~~and~~

~~B.~~ adding a broadcast service hierarchy into the radio access network ~~for specially providing real-time broadcast service in an radio access network having an original service hierarchy for providing voice communication;~~ assigning downlink special broadcast resources for the broadcast service hierarchy, and ~~real-time~~ broadcasting the real-time broadcast service to the mobile terminals~~s via air interface of the mobile communication network~~ through the downlink special broadcast resources ~~setting special broadcast resources~~; and

any of the mobile terminals ~~working~~ communicating with the radio access network ~~in~~using uplink and/or downlink resources of ~~either of an~~the original service hierarchy, ~~mode and~~ receiving the real-time broadcast service ~~a~~ using the downlink special broadcast resources~~broadcasting service hierarchy~~, and ~~mode which can be~~ switch~~ed~~ing between the original service hierarchy ~~with each other~~ and the broadcast service hierarchy.

2. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 1, ~~step A~~wherein the process of linking the real-time broadcast service to the radio access network comprising~~:~~:

transmitting ~~the~~ content information of the real-time broadcast service to an information transmitting server~~; then~~, and accessing the content information of the real-time broadcast service to the ~~mobile communication~~radio access network by the information transmitting server.

3. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 1, ~~under the condition that special carrier resources are~~wherein ~~adopted as~~the downlink special broadcast resources are downlink special carrier frequencies~~,~~;

the method~~step B~~ further comprising: ~~setting only independent down link carrier frequency in the added broadcast service hierarchy for specially providing real-time broadcast service;~~ dividing the broadcast service hierarchy into cells, ~~where~~ the adjacent cells employ different scrambling codes, and defining multiple cells into ~~one~~a location area~~;~~; and

~~under~~ when switching to the broadcast service hierarchy ~~mode~~, the mobile terminal staying in ~~the~~ a cell of the broadcast service hierarchy, ~~solely~~ controlling ~~the cell~~ handoff of the cell~~when the terminal moves among cells~~, and monitoring ~~the~~ paging of the cell in the broadcast service hierarchy ~~procedure~~.

4. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 3, further comprising: setting a broadcast channel for broadcasting corresponding cell information and a paging channel for paging mobile terminals ~~under the broadcast service hierarchy mode~~ in the cell of the broadcast service hierarchy.

5. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 4, wherein said cell information includes location area code and paging channel configuration information of the cell in the broadcast service hierarchy, and carrier~~the~~ frequencies, scrambling codes, Random Access Channel (RACH), an AICH~~,~~ public channel relating to RACH and Forward Access Channel (FACH) of the adjacent cells in the original service hierarchy.

6. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 3, wherein the scrambling codes in the broadcast service hierarchy and those in the original service hierarchy are either the same or different; the ~~location division for~~ cells of the broadcast service hierarchy and ~~that for cells~~those of the original service hierarchy ~~is~~are either superposed or not.

7. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 3, wherein the ~~cell~~

handoff includes location update which is triggered when the ~~mode of~~ mobile terminal ~~is switched~~ switches between the broadcast service hierarchy ~~mode~~ and the original service hierarchy ~~mode~~, and when the location area of the mobile terminal changes ~~under~~ in the broadcast service hierarchy ~~mode~~.

8. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 7, wherein the process of ~~the step of~~ triggering location update when the location area changes ~~under~~in the broadcast service hierarchy ~~mode~~ comprises~~s~~ing: the mobile terminal obtaining information ~~about the~~of cells in the original service hierarchy from the broadcast channel of the broadcast service hierarchy, ~~which~~ the cells in the original service hierarchy is~~are~~ adjacent to the current cell of the broadcast service hierarchy~~, from the broadcast information in broadcast channel in the broadcast service hierarchy~~, finding a cell in the original service hierarchy where the mobile terminal can stay, and sending a random access request utilizing the Random Access Channel (RACH) in the cell of the original service hierarchy;

after receiving ~~the~~ AICH information from the cell of the original service hierarchy, the mobile terminal tuning the receiving frequency to the down-link carrier frequency, starting ~~the~~ search and synchronization for the current cell of~~of~~ the broadcast service hierarchy, meanwhile sending a message containing location update information to the radio access network utilizing the up-link carrier frequency ~~in~~of the original service hierarchy, and waiting to receive a location update confirming message at the current cell of the ~~current~~ broadcast service hierarchy.

9. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 3, wherein the process of ~~the step of~~ monitoring ~~the~~ paging ~~channel under~~ in the broadcast service hierarchy ~~mode is the same as that under the original service hierarchy mode,~~ comprising: the radio access network selecting a cell in a corresponding location area according to the received location information of the mobile terminal, and sending down-link paging information according to the ~~broadcast service~~ carrier frequency of the broadcast service hierarchy or the ~~original service~~ carrier frequency of the original service hierarchy~~, respectively corresponding to the broadcast service mode or the original service mode~~.

10. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 3, ~~under the condition that special carrier resources are adopted as special broadcast resources,~~ further comprising: after ~~the mobile terminal~~ switching ~~the mode~~ from the broadcast service hierarchy ~~mode~~ to the original service hierarchy ~~mode~~, the mobile terminal making a reply or initiating a call ~~through~~ in the original service hierarchy.

11. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 10, wherein ~~the step of the mobile terminal~~the process of making a reply or initiating a call ~~through the original service hierarchy~~ further ~~comprises~~comprising: sending information ~~about~~of the

adjacent cells in the original service hierarchy ~~by the broadcast service hierarchy~~ utilizing the broadcast channel of the broadcast service hierarchy.

12. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 3, wherein the mobile terminal shares ~~one~~a set of receiving system and synchronizing system with other mobile terminals ~~under~~ in the broadcast service hierarchy ~~mode~~ and the original service hierarchy ~~mode~~.

13. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 3, wherein the mobile terminal utilizes a ~~respective~~ different receiving systems, and shares ~~one~~ a set of synchronizing system with other mobile terminals ~~under~~ in the broadcast service hierarchy ~~mode~~ and the original service hierarchy ~~mode~~.

14. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 1, ~~under the condition that~~wherein the~~special scrambling code resources are adopted as~~ downlink special broadcast resources are downlink special scrambling codes.;

the method ~~step B~~ further comprising: superposing ~~setting independent down link special scrambling codes in the added broadcast service hierarchy for specially providing real-time broadcast service; wherein~~ the locations of cells of the broadcast service hierarchy ~~and~~ over those of the original service hierarchy ~~are superposed~~ so as

to form the structure of the cell of the original service hierarchy plus the cell of the broadcast service hierarchy, ~~and~~ wherein ~~each~~the cells utilize~~s~~ the same ~~special~~ down link special scrambling code and ~~the~~a same special broadcast channel code for transmitting ~~only~~ real-time broadcast information~~; said down link special scrambling codes for real-time broadcast service are added only in macro cells but micro cells or pico cells;~~, the working mode of the mobile terminal keeps unchanged for the original service, pilot channel of the ~~original~~ cells in the original service hierarchy is shared, and the real-time broadcast service is supported under both idling mode and connecting mode.

15. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 14, wherein the process of ~~the step of setting~~ assigning~~independent~~ down~~-~~link special scrambling codes in the broadcast service hierarchy ~~is performed through~~comprising: adding a scrambling operation ~~with~~ using the down~~-~~link special scrambling codes in the base station sender of each cell in the original service ~~macro cell covering~~ hierarchy~~;~~, wherein the information of the broadcast service hierarchy and that of the original service hierarchy either share the same power amplifier or utilize~~s~~ respective power amplifiers.

16. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 15, wherein the processing of the sender includes performing modulation and spectrum spreading for the original service and ~~that for~~ real-time broadcast service;

the modulation and spectrum spreading for the original service includes source encoding, channel encoding, Quaternary Phrase-Shift Keying (QPSK), spectrum spreading and scrambling the spectrum spread results utilizing the down-link scrambling codes of each cell for the original service;

the modulation and spectrum spreading for the real-time broadcast service includes source encoding, channel encoding, QPSK, spectrum spreading and scrambling the spectrum spread results utilizing the down-link special scrambling codes for the real-time broadcast service.

17. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 14, wherein the demodulation unit of RAKE receiver of the mobile terminal adopts down-link special scrambling codes for specially receiving the real-time broadcast service; channel decoding and source decoding is implemented respectively for the original service and real-time broadcast service after the signals pass the RAKE receiver; the channel code of RAKE receiver is the special broadcast channel code, namely the down-link special scrambling code.

18. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 14, wherein said structure of the cell of the original service hierarchy plus the cell of the broadcast service hierarchy is that range and location division of the cell of the original service

hierarchy plus the broadcast service hierarchy is the same as that of the macro cell of the original service hierarchy.

19. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 14, wherein ~~the mobile terminal supports real-time broadcast service under both idle mode and connecting mode,~~ the method further comprising: keeping the mobile terminal under idle mode for the original service when ~~the mode of~~ the mobile terminal ~~is~~ switcheds to the broadcast service hierarchy~~mode from idle mode~~; when the mobile terminal is located in a macro cell, according to the channel estimation result for the public pilot frequency of this cell and the channel estimation result for the public pilot frequency of one or multiple adjacent cells with powerful signals, merging the received signals of multi cells and demodulating the signals on special broadcast channel; the mobile terminal selecting and reselecting cells, implementing location update and receiving paging information in terms of the process of original service; when the mobile terminal is located in a micro cell or a pico cell, according to the channel estimation result for the public pilot frequency of one or multiple adjacent cells with powerful signals, merging the received signals of multi cells and demodulating the signals on special broadcast channel; the mobile terminal selecting and reselecting cells, implementing location update and receiving paging information in terms of the process of original service.

20. (Currently Amended) The method ~~for providing real-time broadcast service in a mobile communication network~~ according to claim 14, further comprising:

the mobile terminal evaluating the interference value to a service channel ~~from~~ caused by the ~~added~~ down-link special scrambling codes ~~to service channels through~~ according to the demodulated special broadcast channel data and the ~~known~~ information ~~about~~ of channel transmission condition, scrambling code and channel code, and subtracting this interference value from the received signal.

21. (New) A mobile communication system for providing a real-time broadcast service, comprising:

a radio access network, having an original service hierarchy for providing an original service, and having a broadcast service hierarchy for providing the real-time broadcast service, wherein downlink special broadcast resources are assigned for the broadcast service hierarchy to broadcast the real-time broadcast service; and

a plurality of mobile terminals, wherein each of the mobile terminals communicates with the radio access network using uplink and/or downlink resources of the original service hierarchy, receives the real-time broadcast service using the downlink special broadcast resources, and switches between the original service hierarchy and the broadcast service hierarchy.